REMARKS

Claims 3, 8-16, and 18-33 remain pending in this application for which applicants seek reconsideration. Claims 3, 8, 14-16, and 18-33 have been withdrawn.

Amendment

Withdrawn claims 3 and 18-21 have been amended to correct minor informality contained therein, namely correcting the language "fourth semiconductor" to --buffer--. Independent claims 9-11 have been amended to further define that the depletion layer (space charge region) extends from the pn junction to the cathode layer. Support for the amendment is found at least on paragraphs 73 and 89 of the present specification. Claims 11 and 12, and paragraph 21 of the present specification have been amended to remove the stray line "|" appearing before "X_1}" (in expression 3). Paragraph 21 also has been amended to remove a typographical error ", ,". No new matter has been introduced.

Art Rejection

Claims 9-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yamada (JP-2000-223720). Applicants traverse this rejection because Yamada would not have suggested or taught having its depletion layer extend from its pn-junction to the cathode layer.

Each of claims 9-11 now calls for the depletion layer to extend from the pn junction to the cathode layer. Yamada explicitly teaches away from forming a depletion layer that extends to the cathode layer:

> The reason the (1) aforementioned (1) formula needs to be realized is for making it the electric field in pressure proofing not reach n+ type cathode layer. [Yamada, ¶ 36].

> In addition, although it is satisfactory even if the electric field at the time of the proof-pressure impression in the aforementioned pin diode exist in n-type impurity layer 6 or n-type impurity layer 9, it is necessary to make it the electric field and electric field produced from a cathode side not cross. [Yamada, ¶ 51].

In each of the embodiments disclosed in Yamada, the thickness Wi of the layer 1 occupies greater than half the thickness of the drift layer so that its depletion layer does not reach the cathode layer. See Yamada, ¶ 34. In contrast, claims 9-11 call for a depletion layer that extend from the pn junction to the cathode layer. As Yamada explicitly teaches away from having its depletion layer extend to the cathode layer, Yamada would not have taught the claimed invention. As to the examiner's comments that it would have been obvious for Yamada to optimize the thickness range of the drift sublayer 1, Yamada would have optimized the thickness range so that its depletion layer does not reach the cathode layer. As Yamada teaches the opposite of what the claims call for, it would not have been obvious for Yamada to provide the claimed range of thickness (that will provide the undesirable effect in Yamada).

Conclusion

Applicants submit that claims 9-13 (as well as claims 3, 8, 14, 15, and 18-33) patentably distinguish over the applied references and are in condition for allowance. Should the examiner have any issues concerning this reply or any other outstanding issues remaining in this application, applicants urge the examiner to contact the undersigned to expedite prosecution.

Respectfully submitted,

LYLE KIMMS
REG. NO. 34079
RULE 34A

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Marc A. Rossi
Registration No. 31,923

ROSSI & ASSOCIATES
P.O. Box 826
Ashburn, VA 20146-0826
Phone: 703-726-6020